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Name

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application Of: O'Brien

For: Low Polarization Coatings For Implantable Electrodes

the specification of which is being transmitted herewith

Assistant Commissioner of Patents
Alexandria, VA 22313-1450

**INFORMATION DISCLOSURE STATEMENT
Pursuant to 37 CFR 1.56**

1. Applicants submit herewith patents, publications or other information of which they are aware, which they believe may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR 1.56.

The filing of this Information Disclosure Statement (IDS) shall not be construed as a representation that a search has been made (37 CFR 1.56(g)), an admission that the information cited is, or is considered to be material to patentability or that no other material information exists.

The filing of this IDS shall not be construed as an admission against interest in any manner (Notice of Jan. 9, 1992, 1135 O.G. 13-25, at 25).

2. Attached is Form PTO-1449.

3. A concise explanation of the possible relevance of the listed information items is as follows:

IDS For: Low Polarization Coatings For Implantable
Electrodes
Inventor: O'Brien

Patents:

U.S. Patent No. 5,118,400 to Wollam shows a method for making biocompatible electrodes. Electrode tips are cleaned and then introduced into a sputtering chamber. After evacuating the chamber, an inert gas is introduced and a plasma discharge is generated. The cleaned tips are exposed to bombardment by ions of the inert gas. Successive layers are deposited on the electrodes including a biocompatible coating. Example II at column 7, line 23 shows that biocompatible layers such as titanium, platinum, and carbon may be applied in series where the platinum layer may be 0.2 micrometers and the carbon layer is about 0.6 micrometers. However, in this patent, the biocompatible platinum coating is intermediate the titanium layer and the carbon layer.

U.S. Patent No. 5,482,602 to Cooper et al. discloses a coating method for depositing diamond-like carbon (DLC) using a broad beam ion deposition coating method. Suitable interface layers between the DLC coating and the particle surface include titanium nitride (column 7, line 33).

U.S. Patent No. 5,980,973 to Onyekaba et al. discloses implantable medical devices having a biocompatible surface comprising titanium particles applied to a titanium housing. The particles are in the 1-5 micron range and are preferably sintered to the housing surface in a thin layer to provide microscopic surface texturing.

U.S. Patent No. 6,253,110 to Brabec et al. shows a method for reducing the post pulse polarization levels of pacing electrodes provided with platinum black or other high

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surface area coatings. The electrodes are plasma cleaned following application of the high surface area coating.

U.S. Patent No. 4,934,381 to MacGregor discloses a porous carbon pacemaker electrode that permits tissue to form in the pores and at the surface thereof with a resulting tissue bond to the adjacent endocardium. The electrode may be constructed wholly of carbon with the porous surface formed as an integral part thereof.

U.S. Patent No. 4,607,193 to Curren et al. relates to a method for applying a textured carbon surface. The carbon is applied by a sputtering process and is characterized by a dense, random array of needle-like spires or peaks that extend perpendicularly from a copper surface. A substrate and carbon target are mounted in a vacuum chamber containing an argon plasma and simultaneously bombarded with a beam of ions to provide the carbon coating.

U.S. Patent No. 5,122,249 to Niemann et al. teaches a method for producing a covered layer of amorphous, glass-like carbon on a substrate. The cover layer is accomplished by direct current magnetron cathode sputtering using a glass-like carbon target in an argon-hydrogen or argon-hydrogen-fluorocarbon atmosphere. The substrate is preferably an electrophotographic recording material. Similar layers are produced by the method of U.S. Patent No. 5,147,590 to Preidel et al.

U.S. Patent No. 5,326,448 to Otten shows another method for reducing the polarization of bioelectrical stimulation leads using surface enhancement by immersing the leads in an electrolyte (either acid or base) solution. While

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the leads are immersed, surface enhancement and hydroxide reduction steps are performed. Surface enhancement comprises repetitively applying oscillating anodic and cathodic currents to the electrode at a predetermined frequency in the range of from 1 hz to 10 Khz.

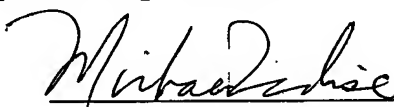
U.S. Patent No. 6,464,889 to Lee et al. teaches surface modification of medical implants by exposing their metallic surface to a plasma of a reactive etching species. Suitable substrates include those of titanium.

U.S. Patent No. 6,328,856 to Anzaki et al. relates generally to producing coatings via a sputtering method on various substrates.

4. The remaining patents on the attached Form PTO 1449 were located during a patentability search.

5. The person making this statement is the agent who signs below, who makes this statement on the information supplied by the inventors and the information in the agent's file.

Respectfully submitted,

By: 
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PTO/SB/08A(08/00)

Approved for use through 10/31/2002, OMB 0651-0031

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT***(Use as many sheets as necessary)*

INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Application Number		
				Filing Date		March 3, 2004
				First Named Inventor		O'Brien
				Group Art Unit		
				Examiner Name		
Sheet	5	of	5	Attorney Docket Number		31611.0031

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. 1	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code 2 (if known)			
	1	4,033,357		Helland et al.	07-05-1997	
	2	4,281,668		Richter et al.	08-04-1981	
	3	4,495,039		Cerise et al.	01-22-1985	
	4	4,602,637		Elmquist et al.	07-29-1986	
	5	4,607,193		Curren et al.	08-19-1986	
	6	4,609,508		Edeling et al.	09-02-1986	
	7	4,612,100		Edeling et al.	09-16-1986	
	8	4,934,381		MacGregor	06-19-1990	
	9	5,074,313		Dahl et al.	12-24-1991	
	10	5,118,400		Wollam	06-02-1992	
	11	5,122,249		Niemann et al.	06-16-1992	
	12	5,147,590		Preidel et al.	09-15-1992	
	13	5,326,448		Otten	07-05-1994	
	14	5,482,602		Cooper et al.	01-09-1996	
	15	5,980,973		Onyekaba et al.	11-09-1999	
	16	6,253,110B1		Brabec et al.	06-26-2001	
	17	6,328,857B1		Anzaki et al.	12-11-2001	
	18	6,464,889B1		Lee et al.	10-15-2002	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. 1	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T6
		Office3	Number4	Kind Code5 (if known)				

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Unique citation designation number. 2 See attached Kinds of U.S. Patent Documents. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.